BY ORDER OF THE COMMANDER
AIR FORCE SPECIAL OPERATIONS COMMAND

AFSOC INSTRUCTION 11-208, CHANGE 2
1 AUGUST 1997

Flying Operations

HELICOPTER OPERATIONS

COMPLIANCE WITH THIS INSTRUCTION IS MANDATORY

AFSOCI 11-208, 1 March 1997, is changed as follows:

OPR: HQ AFSOC/DOVR (Maj Berner)
Certified by: HQ AFSOC/DOV (Col Jerry L Garlington)
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1. Write-in Changes:

Page	Para	Line	Action
5		13	Add: Para 13.20 page 88.1 "Station Keeping."
6		13	Add: Fig 11.5 page 75.2 "H-1 Main Rotor Clearance" and Fig 11.6 page 75.2 UH-1N Tail Rotor Clearance."
17	3.6.1.1	44	Add: H-1, 12 hours.
26	Add Para 5.12.4	19	Add: An operable IR spotlight or dimable white light should be available prior to NVG operations.
34	Add Para 6.10.1.1.1.	47	Minimums for day, single-pilot operations are 1,000 foot ceiling and 3 miles visibility (H-1 only).
35	6.12.1	38	Insert in first sentence pertaining to fuel requirements following H-53, the following: "250 pounds H-1."
35	6.12.1	39	Insert in last sentence pertaining to fuel reserves following H-53, the following: "200 pounds H-1."
52	Add Para 9.8.1.6.	55	Hovering autorotations (UH-1N).
54	9.8.2.6.1	5	Add the following exception immediately after the sentence: "except H-1's, which may practice single-engine approaches to an approved slide area."
54	9.8.2.6.2	8	Add the following exception immediately after the sentence: "except H-1's which must not be lower than 150 ft AGL, 55 KIAS."
54	9.8.2.7.1	23	Add the following exception to the end of the sentence: "except H-1's, which will enter at a minimum altitude of 500 ft AGL and 70 KIAS."
123	18.2	16	Replace "volume II" in the first sentence, with the follwing: "AFSOCCL 24".

2. Page-Insert Changes: Changes are indicated by an asterisk (*).

Remove	Date	Insert
7-8	1 Mar 97	7-8
15-16	1 Mar 97	15-16.2
19-20	1 Mar 97	19-20
23-24	1 Mar 97	23-24
27-28	1 Mar 97	27-28.2
29-32	1 Mar 97	29-32
53-54	1 Mar 97	53-54.4
75-76	1 Mar 97	75-76.1
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CHAPTER 1

GENERAL INFORMATION

1.1. General:

1.1.1. This is a command directive for helicopter aircrews. It is written for normal and contingency operations to minimize requirements for procedural changes at the onset of contingencies. Procedures for the training environment are included.

1.1.2. The Directorate of Aircrew Standardization/Evaluation (HQ AFSOC/DOV) has overall responsibility for administration of this instruction.

1.2. Applicability. All AFSOC units. References to AFSOC units, personnel, and aircraft in this instruction include all AFSOC-gained forces unless specifically exempted by this instruction.

1.3. Terms Explained:

1.3.1. "Will and shall" indicate a mandatory requirement.

1.3.2. "Should" indicates a recommended procedure that is required if practical.

1.3.3. "May" indicates an acceptable or suggested means of accomplishment.

1.3.4. **WARNING**: Operating procedures, techniques, etc., which will result in personal injury or loss of life if not carefully followed.

1.3.5. **CAUTION**: Operating procedures, techniques, etc., which will result in damage to equipment if not carefully followed.

1.3.6. **NOTE**: Operating procedures, techniques, etc., which are essential to emphasize.

1.4. Deviations and Waivers. Do not deviate from the policies and guidance in this instruction, except:

1.4.1. For safety.

1.4.2. If beyond command and control communications capability, aircraft commanders may deviate from this directive as necessary to protect their crew and aircraft. Although this publication provides guidance for aircraft operations under most circumstances, it is not a substitute for sound judgment. Report deviations, without waiver, through channels to HQ AFSOC/DOV within 48 hours, followed by a written report if requested.

1.4.3. When waived by the appropriate authority. Unless otherwise indicated, AFSOC/DO is the waiver authority for this instruction. AFSOC/DO may delegate this authority to the COMAFSOF for operationally assigned forces. Request waivers through command and control channels.

*** 1.5 Supplements.** Groups may supplement this instruction. Units will publish a supplement to Chapter 10. See paragraph 10.1 for items which may be included. Format the chapter to conform to the remainder of this instruction. Unit operating procedures will not duplicate, alter, or amend the provisions of this instruction in order to make the provision less restrictive than the basic instruction.

***1.6. Requisitioning Procedures.** Units will requisition this instruction through their servicing PDO.

1.7. Revisions. Personnel at all echelons are encouraged to submit proposed changes IAW AFI 11-215, to HQ AFSOC/DOVR. Use AF Form 847, Recommendation for Change of Publication.

transportation of civilian law enforcement personnel, etc., but US military personnel may not directly participate in search and seizure or arrest.

CHAPTER 3

CREW COMPLEMENT/MANAGEMENT

3.1. Aircrew Qualification. Each person assigned as a primary crewmember must be qualified or in training for qualification in that crew position, mission, and mission design series (MDS) aircraft.

3.1.1. Basic proficiency crewmembers may perform primary crew duties on any non-mission sortie and on missions (including unilateral training, joint training and exercises) when receiving mission qualification training or evaluations under the supervision of a qualified instructor or flight examiner in their respective crew position. Crewmembers noncurrent or unqualified for mission items may perform FCFs.

3.1.2. Mission capable crewmembers may perform primary crew duties on any unilateral training mission. For other missions, the unit commander must determine the readiness of each mission capable crew member to perform primary crew duties.

3.1.3. Noncurrent (NC) or unqualified (UNQ) pilots may perform crew duties only on designated training or evaluation missions under the supervision of a qualified instructor or flight examiner pilot. Pilot positions will be occupied by current and qualified pilots when passengers (except MEGPs) are carried on training or evaluation missions.

3.1.4. Other NC or UNQ crewmembers may perform duties in their primary crew position on any mission when under direct supervision of a qualified instructor or flight examiner in their respective crew position. In this case, the student crewmember and the instructor or flight examiner fulfills the requirement for one primary position as specified in figure 3-1.

3.1.5. Unqualified personnel may perform duties in non-pilot crew positions during flight under direct instructor/flight examiner supervision. The purpose of this familiarization training is to enhance crew esprit and to enable the individual to gain a better understanding of the crew concept. This training will only be conducted in permissive environments, and only when mission accomplishment is not impacted.

3.1.6. Flight surgeons may fly in their specialty in all AFSOC aircraft. Flight surgeons assigned or attached to AFSOC units will comply with AFI 11-401 and AFI 36-2208, AFSOC Sup 1, for qualification and training.

3.2. Crew Complement. The minimum crew complement will be as specified in the flight manual and Figure 3-1. The wing or group commander, or COMAFSOF, is the waiver authority for all crew positions above the minimum specified by the flight manual.

* 3.2.1. H-1 Crew Complement.

* 3.2.1.1. Minimum crew for instrument procedures (IMC or VMC) is the aircraft commander and a copilot.

*3.2.1.2. Minimum crew for NVG operations in LZ's equal to or larger than 3 rotor diameters in size is the aircraft commander, copilot , and 1 scanner. Minimum crew for NVG operations in LZ's smaller than 3 rotor diameters in size is the aircraft commander, copilot, and 2 scanners.

3.3. Additional Crewmembers (ACM). An ACM is one assigned in addition to the normal aircrew complement required for a mission. ACM status granted under this paragraph is applicable only to AFSOC aircraft.

3.3.1. Policy Governing ACM Authorization. Unit commanders may authorize ACM status to personnel assigned or attached to the unit. ACM status will not be granted to personnel while on leave. Unit commanders have approval authority for personnel traveling on ACM orders to fly on aircraft under their control.

3.3.2. Orders. ACM travel authority must be cited on the orders and include the crew position for which the individual is qualified. Travel orders which do not cite ACM authorization must be accompanied by written authorization (letter or message).

Logging of Flying Time. Flight examiners, HQ and group tactics personnel, flight surgeons, and medical technicians log flying time IAW AFI 11-401. Other ACMs may log flying time only at the discretion of the aircraft commander.

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waived for flight surgeons or medical technicians who are on alert duty for urgent aeromedical evacuation missions.

3.10.1. Crew duty time period starts when the crew reports for flight. Do not construe the initial daily alert activities (e.g., briefing, preflight, cocking, engine run, hover check of the alert aircraft) as starting the flight duty time period of the alert crew.

3.10.2. The alert crew may be considered in crew rest status upon the termination of the flight, even though remaining on alert. It is recognized that numerous circumstances may arise that affect the decision to replace the alert crew, and each incident must be evaluated on an individual basis.

3.10.3. If the alert crew completes 12 consecutive hours of crew rest between flights, the previous CDT period no longer applies and the cycle can be started anew provided the crew does not remain on alert for more than 72 hours from their initial assumption of alert.

3.10.4. Do not use the alert crew as a "preflight or engine run" crew for aircraft, other than the alert aircraft, nor to perform other fatiguing duties.

3.10.5. Grant alert crews required to stand alert at locations other than their domicile during other than normal duty hours 1 hour of free time for every 3 hours of alert.

3.11. AFSOC Alert Aircraft. Unit CC/COMAFSOF will determine if aircraft are on alert. Note: AFSOC "Alert" aircraft designations are not directed by the National Command Authority (NCA), but are implemented by the mission commander to place designated aircraft packages on an increased level of standby and does not require increased security forces as indicated in AFI 31-101, Chapter 13. The decision to post additional security forces should be based on the local threat. Maintain aircraft on alert status IAW the following:

3.11.1. Parking. Park the alert aircraft in a designated alert parking area to expedite taxi and takeoff.

3.11.2. Fuel Load. Unit commanders will determine the fuel load of alert aircraft based on the type of operation, mission activity, and requirements within their area of operation.

3.11.3. Climatic Protective Facilities. During periods of extreme cold or severe weather, every effort should be made to shelter essential AGE and alert aircraft in a hangar to ensure operational readiness in the event of a mission. Blade covers and engine heaters must be available for use, as required.

3.11.4. Flying Alert Aircraft. The alert aircraft may be flown for purposes other than actual alert missions provided the following conditions are complied with:

3.11.4.1. Alert requirements can be met with sufficient fuel to meet mission requirements.

3.11.4.2. Communication contact is maintained with the primary controlling agencies.

3.11.4.3. Complete operationally qualified crew is on board.

3.11.4.4. Controlling agencies are notified any time the alert aircraft departs the local area.

3.12. Alert Procedures. Give alert crews a general briefing at the beginning of each alert period. Update the briefing every 24 hours to include weather, local NOTAMs, latest FCIF information, special instructions, and any other appropriate items. Alert crews will prepare a DD Form 365F, Weight and Balance, for the alert aircraft and are authorized to prepare a TOLD card using the worst weather conditions expected during the alert period. Use this TOLD data only for alert scrambles. If the alert aircraft is flown for other reasons, accomplish a TOLD card for that flight using existing weather conditions.

*** Figure 3.1. Crew Complement.**

	MH-53	MH-60	*UH-1N
Mission	P CP FE AG	P CP FE AG	P CP FE Scan
FCF (Note A)	1 1 1	1 1 1	1 1D
*Transition/Instm/EP's/Remote	1 1 1	1 1 1	1 1
SAR/ALERT	1 1 2 2	1 1 1 1	1 1 1EF
Day/Night Tac	1 1 2 2	1 1 1 1	1 1 1EFG
Ferry (Note C)	1 1 1	1 1 1	1 1H
Non-Tac Day Formation	1 1 1	1 1 1	1 1
Day Water Ops	1 1 2 2	1 1 1	1 1 1EF
Augmented	Note B	Note B	N/A

NOTE A. Unit commanders must designate FCF crewmembers in writing. When designated crewmembers are not available, other highly qualified crewmembers may be designated by the commander or his designated representative on the AFSOC Form 41. FCF copilots should be aircraft commander qualified. This, however, does not preclude designation of a highly qualified copilot when an aircraft commander is not available.

NOTE B. Requires one more aircraft commander and flight engineer.

NOTE C. Non-simultaneous air refueling may be accomplished.

NOTE D. FCF qualified copilot, flight engineer, or crew chief.

***NOTE E.** Any qualified scanner.

***NOTE F.** Hoist operations will be performed by a qualified hoist operator.

***NOTE G.** Night tac operations into landing zones equal to or larger in size than 3 rotor disks require 1 scanner. Night tac operations into landing zones less than 3 rotor disks in size require 2 scanners.

***NOTE H.** A flight engineer or crew chief will accompany aircraft recovering away from home station.

5.9. Passenger Classification. Adhere to DOD 4515.13-R, Air Transportation Eligibility, when determining the eligibility of passengers aboard all aircraft. All personnel traveling under the provisions of this paragraph will be manifested on a DD Form 96, Passenger Manifest. See figure 5-1 for waiver authority, profiles approved and types of restraint required.

5.9.1. Mission Essential Ground Personnel (MEGP). MEGP are individuals who perform essential duties in support of a particular aircraft, aircrew, or mission. Grant MEGP status on a case-by-case basis only. Commanders approve MEGP status on unit aircraft for unit assigned and attached personnel. COMAFSOF has MEGP authority for assigned aircraft. Personnel traveling in MEGP status are passengers but report through the command post or unit operations to the aircraft commander rather than the passenger terminal. Cite MEGP approval in travel orders, message or letter signed by the appropriate approval authority. Aircraft commanders will ensure MEGP are properly authorized, manifested, and briefed prior to flight. Do not use AFSOC Form 41, Flight Authorization, to show MEGP status. Commanders will ensure that MEGP status is not used for avoidance of travel expenses or for travel while on leave. Route requests for MEGP through DOV channels. See figure 5.1 for approval authority.

NOTE: Do not use MEGP status in lieu of incentive flight status.

5.9.2. Orientation Flights. Details of these are contained in DOD 4515.13-R, Chapter 4, and AFI 11-401, paragraph 1.9.3.7. They are defined as "continuous flights in DOD-owned aircraft performed within the local flying area and terminating at the point of origin." The following categories are eligible for orientation flights:

5.9.2.1. Incentive Flights. Commanders may authorize unit assigned military personnel to accompany unit aircraft on unit training missions for this purpose. The group commander must approve incentive flights for other than unit assigned personnel. Individuals will report directly to the crew, and will be escorted by a crewmember for the duration of the mission. They are passengers, but will be manifested and processed by the sponsoring unit. Do not use incentive flights in lieu of regular passenger travel. Do not perform simulated emergencies or evasive maneuvers during these flights.

5.9.2.2. Distinguished Visitor (DV) Flights. Also included are: members (age 14 or older) of national youth organizations and accompanying adult leaders, civilian officials of institutions offering AFROTC training, AFJROTC cadets, key civilian officials, and CAP cadets.

5.9.2.3. Familiarization. Individuals requiring flights to understand the capabilities or interface requirements of SOF aircraft. FAA designated check airmen and FAA or military air traffic controllers are authorized orientation flights IAW DOD 4515.13-R.

* 5.9.2.4. Spouse Orientation Flights. Adhere to AFI 11-401, paragraph 1.9.3.7.4, as supplemented.

5.9.3. Public Affairs Travel. Details of these are contained in DOD 4515.13-R, Chapter 3, and are defined as "any travel or transportation ... undertaken as a result of a request to an invitation from, and authorized by, an approving authority in the interest of adding to the public understanding of DOD activities." This travel is usually provided for local media or other individuals who are part of an approved public affairs program. They would result in local coverage on matters solely within the host unit commander's range of authority. Requests of this nature will be processed through public affairs channels. Approval authority for passengers in this category is per figure 5-1.

* 5.9.4. Limitations. Do not carry passengers on training missions involving emergency procedures, pilot requalification, air refueling, or tactical flight regimes unless specifically authorized by the approving authority specified in figure 5.1 (This paragraph does not apply to personnel identified as MEGP).

5.10. Personnel Loading (See figure 5.1.).
WARNING: Personnel must be aware of the possibility of reduced main rotor and tail rotor blade ground clearance and avoid the upslope side and tail rotor side of the helicopter when off or onloading.

WARNING: Personnel will have weapons pointed down, safetied, and radio antennas collapsed prior to entering the rotor plane. They will enter the rotor plane area only when cleared by the crew (beckoning motion hand signal).

5.10.1. H-53 specifics:

5.10.1.1. Personnel normally enter the aircraft through the ramp entrance and move as far forward or aft in the cabin as the aircrew directs. Personnel in the aft cabin area, when loaded, will not extend past the ramp hinge.

5.10.1.2. Troops must be seated and secure prior to takeoff.

5.10.2. H-60 specifics:

5.10.2.1. Personnel enter the aircraft from both sides. Troops must be seated and secure prior to takeoff.

5.10.2.2. Personnel Offloading (H-53/60). Personnel will depart the aircraft as directed by the aircrew.

5.11. Personnel Restraints. (See figure 5.1.).

5.11.1. Aircrew. All personnel must be restrained by the safest means possible for the type mission being flown. At least one pilot will have seat belt and shoulder harness fastened when rotors are engaged. Crewmembers may perform duties that require them to be unrestrained for short periods of time provided they are not in close proximity to an open door.

5.11.1.1. H-53 flight engineers are not required to wear the shoulder restraint harness when it prevents movement required with duties. The seat back should be up (except over water) and the lap belt used at all times.

5.11.1.2. MH-60 flight engineer and gunner seats will not be removed except during actual contingency operations.

5.11.2. Combat equipped troops. When carrying troops/teams and seats/seatbelts are not installed/used due to mission or aircraft load, alternate retraints will be used by those personnel. These restraints may not protect occupants in a crash sequence as well as a seatbelt, but must be of such design to keep occupants from falling out of open doors. Each individual will have a restraint to secure him to the aircraft. Additionally, doors will be closed, or cargo straps placed across open doors, where the possibility exists that personnel could fall out. NOTE: Additional aircrew are considered team members within the context of this paragraph.

5.11.3. Alternate loading methods used should allow seats and equipment not required for the mission to be removed. Define the cabin floor itself as the seat and use either a seat belt, snap link device, tiedown strap, or similar restraining device to restrain all occupants. Brief all users on the type of restraining device installed.

5.11.3.1. Alternate restraints will be secured as soon as possible before/after takeoff. They will not be removed until as late as practical prior to the landing/assault (no earlier than the 5 minute call).

5.11.4. Accomplish troop security by one of the following methods in descending order of preference:

5.11.4.1. Seatbelts or snap links attached to tiedown rings on the cabin floor.

5.11.4.2. Static line anchor cable to provide a hook-up point for troops equipped with snap link devices. Cables can be locally manufactured; weight test them to 2500 lbs prior to placing into service and test them annually thereafter IAW T.O. 1-1A-8.

5.11.4.3. Five thousand (5,000) pound tiedown straps.

5.15.1.2.1. "One hundred feet above" decision height (DH).

5.15.1.2.2. "Land" at DH if the runway environment is in sight and the aircraft is in a position for a normal landing.

5.15.1.2.3. "Go-around" at DH if the runway environment is not in sight or if the aircraft is not in a position for a normal landing.

5.15.1.3. Climb Out:

5.15.1.3.1. Transition altitude.

5.15.1.3.2. "One thousand feet below" assigned altitude.

5.15.1.4. Descent:

5.15.1.4.1. Transition altitude.

5.15.1.4.2. "One thousand feet above" assigned altitude.

5.15.1.4.3. "One thousand feet above" initial approach fix altitude or holding altitude.

5.15.2. Any crewmember observing heading deviations, airspeed deviations of 10 knots, altitude deviations of 100 feet, or potential terrain or obstruction problems will immediately advise the pilot flying. Also announce deviations from prescribed procedures for the approach being flown.

5.16. Communications Policy:

5.16.1. Interphone Communications.

5.16.1.1. Limit intraplane transmissions and radios monitored to those essential for crew coordination.

5.16.1.2. All crewmembers will listen to interphone and hot microphone. Clearance is required from the aircraft commander prior to going off interphone.

5.16.2. Command Radios.

5.16.2.1. Normally, use and monitor only one command radio plus guard. Monitoring two ATC controlling agencies' transmissions simultaneously is not recommended. This does not preclude establishing contact or radio check on another frequency.

5.16.2.2. The pilot operating command radios will tell the crew which radio is primary. All crewmembers will monitor the primary command radio unless specifically directed to do otherwise by the aircraft commander.

5.16.2.3. Regardless of the primary command radio, monitor UHF GUARD (243.0).

5.16.2.4. One of the pilots will record and read back all ATC clearances except when ATC instructions require immediate execution and read back would interfere with the timely performance of aircrew duties.

5.17. Illumination Requirements:

* 5.17.1. Night vision goggles, AHHS, or PAVE LOW system is the primary method of conducting missions into and from unlighted areas.

5.17.2. Operations may be conducted down to 50 feet obstacle clearance with sufficient available illumination (illumination equivalent to 5 percent moon disk for operations using ANVIS or ITT F4949 goggles). Do not fly with ANVIS and F4949 NVGs mixed on a crew. During overcast sky conditions, sufficient reflected light may be available, depending on surrounding area lighting, to safely conduct NVG operations. The decision on whether there is sufficient available illumination to safely conduct low-level NVG operations rests with the aircraft commander or flight lead.

5.17.3. When available illumination will not permit safe low-level NVG operations, approaches may be accomplished using additional light source, such as an external IR floodlight or searchlight, once you have established your position and are within 2 NM of the LZ. Consider using LZ ground lighting, especially for large formation landings.

* 5.17.4. Fully operational (functional FLIR and Radar) MH-53J aircraft have no enroute illumination restrictions. Other helicopters may fly on the wing of an MH-53 utilizing PAVE LOW systems in zero illumination conditions.

WARNING: NVG's worn in black-hole conditions can exacerbate induced motion illusions and lead to spatial disorientation.

*5.17.5. Unaided night remote operations are unauthorized (H-1).

*5.17.6. Single pilot flights are unauthorized between the hours of official sunset and official sunrise (H-1).

5.18. Altitude Restrictions. Conduct all operations at or above 300 feet AGL except when lower altitudes are required for takeoff, landing, operational missions, training flights in approved areas or routes, or approved exercise missions.

5.18.1. Minimum enroute altitude for unaided night navigation, both operationally and for training, is 500 feet above the highest obstacle within 5NM.

5.18.2. NVGs and PAVE LOW system are the only approved methods for conducting night operations below 300 feet. (Exception: For AHHS training, MH-60G crewmembers may conduct NWO without NVGs under the supervision of another crewmember of the same crew position acting as a safety observer.) Helicopters are limited to a base altitude of 50 feet above obstacles during day or night low-level tactical operations. Minimum altitudes should be adjusted upward for limited available illumination and reduced aircrew proficiency. Normal NVG overwater cruise flight is limited to 100' AWL base altitude. If required due to the tactical situation (METT-T), aircrew training/proficiency and night water operations, NVG overwater cruise is permitted down to a base altitude of 50' AWL in aircraft equipped with Pave Low (MH-53) or AHHS and VAWS (MH-60) systems. Time spent at the minimum altitude should be the minimum required to defeat the threat or complete tactical proficiency training and night water operations.

5.18.3. When sufficient illumination is not available to conduct NVG low-level operations, or when flying over a nonsurveyed area, conduct flights at a minimum altitude of 300 feet AGL in nonmountainous areas and 500 feet above the highest obstacle within 2 NM in mountainous areas.

5.18.4. Pilots must compute a minimum safe altitude for each leg of a low-level route. For flights conducted in a designated low-level area, a minimum safe altitude may be computed for the planned area of operation. The heading and altitude must provide a minimum of 1000 feet (2000 feet in mountainous areas) above obstacles within 10 NM of the course centerline within controlled airspace, 22 NM in uncontrolled airspace. Within the United States (50 states), this distance may be reduced to 5 NM.

5.18.5. When unable to determine the aircraft position during low level operations training, climb to a minimum altitude of 300 feet AGL and reorient before resuming low level-navigation. If reoriented prior to reaching 300 feet, low level navigation may be resumed. If unable to reorient, climb to minimum safe altitude and terminate low level training. In all situations, maintain VMC if possible.

5.19. Wind Restrictions. Discontinue helicopter flights, as indicated, when surface winds exceed flight manual limits.

5.19.1. Training/exercise missions.

5.19.1.1. Thirty knots steady state or 20 knots gust spread.

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5.19.1.2. Forty knots steady state or 20 knots gust spread when an instructor pilot is in command.

5.19.2. Restrictions IAW applicable flight manual for Operational and Support Missions.

5.20. Aircraft Refueling. When not directly involved in the refueling operation, personnel will remain at least 50 feet from refueling operations.

5.21. Weight and Balance. A new or corrected DD Form 365-4, Weight and Balance Clearance Form F, need not be recomputed provided the initial takeoff gross weight (item 16) is not changed by more than 500 lbs. The flight engineer will compute inflight crew and passenger equipment movement to ensure CG limits are not exceeded. These computations will address the maximum number of personnel and equipment that can be in a specific compartment without exceeding CG limits. This procedure applies to all operations in which CG limits may be exceeded as a result of personnel and equipment movement. Although no written adjustments are required, the flight engineer will compute these changes and brief the aircraft commander of the new CG. These computations will be briefed during the crew or mission brief or during flight, as required.

5.22. Aircraft Taxi Obstruction Clearance Criteria.

5.22.1. Without wing walkers, avoid taxi obstructions by at least 25 feet; with wing walkers, by at least 10 feet.

5.22.2. When taxi clearance is doubtful, use a wing walker. If wing walkers are unavailable, or if provided and doubt still exists as to proper clearance, deplane a crewmember to maintain obstruction clearance.

5.23. Helicopter Maneuvering. Helicopter operations are normally limited to 60 degrees of bank. Planned exceptions to this guideline are permitted when conducting tactical confidence maneuvering training or emergency procedures training. In all cases, a 60 degree restriction applies to missions when passengers, including MEGP are on board, or when flying on night vision goggles.

5.24. Rotor Turning Offload and Onload Procedures. Employ the following procedures when helicopter rotors are turning:

5.24.1. The aircraft commander, or designated representative, will brief passengers on procedures to be followed.

5.24.2. The right cabin door is the primary entrance and exit door on the H-53. Either door may be used on the H-60. The aft ramp in the H-53 may be used after the aircraft commander has ensured adequate tail rotor clearance and passengers have been briefed to avoid the tail rotor area. Operational off/onload of combat troops is normally via the aft ramp on the H-53. The gunner or scanner on the ramp will ensure troops do not go in the immediate vicinity of the tail rotor. The gunner should not leave his weapon position to escort teams in a threat environment.

5.24.3. One crewmember will escort passengers through the safe approach zone when off/onloading the aircraft, except when off/onloading in a threat environment or during combat training.

5.24.4. Rotors turning off/onload for crew changes during local training missions is authorized provided the enplaning crew does not approach the helicopter until cleared by a crewmember. The crewmember clearing in personnel must be on intercom.

5.25 ECM Policy. For training, operational ECM software can only be used in the CONUS, and only after the signal collection risk is evaluated. Evaluate the signal collection risk through coordination with squadron intelligence personnel. Crewmembers will provide geographical coordinates of the intended operating area, the time period of concern, and the frequency range of ECM operations. After analyzing the signal collection risk, operational ECM software may be used during scheduled airborne intercept training and against ground and sea-based threats. Use of operational software against Multiple Threat Emitter System (MUTES) is prohibited at all times. Accomplishing system BIT in accordance with aircraft checklist with operational software is approved.

In all other training situations within the CONUS and in all training situations overseas only use ECM software versions specifically designated for training.

5.26. Flares and Chaff Policy.

5.26.1. Dispense flares IAW controlling agency procedures and restrictions. When over water, dispense flares at least 3 NM from any surface vessel, platform, or land mass.

5.26.2. Dispense chaff IAW controlling agency procedures/restrictions and AFI 10-701.

***5.27. Oxygen Requirements.**

5.27.1. AFSOC helicopter flight operations above 10,000 feet MSL without supplemental oxygen shall only be conducted when mission essential.

5.27.1.1. Aircrew will attend altitude chamber training that fulfills the requirements specified in AFI 11-403 for helicopter aircrew. This training will be accomplished at three year intervals for each crewmember.

5.27.2. Operations may be conducted between 10,000 and 12,500 feet MSL for a maximum of one hour, between 12,500 and 14,000 feet MSL for a maximum of 30 minutes. The total flight time above 10,000 feet MSL shall not exceed one hour. Flight above 14,000 feet MSL without supplemental oxygen is not authorized.

5.27.3. The aircraft commander shall immediately descend below 10,000 feet MSL should any person on the aircraft begin to experience hypoxia symptoms. The aircraft commander shall then land at a suitable location to obtain medical assistance and consultation with a flight surgeon or civilian aeromedical examiner. The affected person shall not continue the flight until such consultation is completed and approval is given by the flight surgeon or aeromedical examiner.

WARNING: Unpressurized operations above 10,000 feet MSL without supplemental oxygen are known to cause measurable performance decrement. The effects of several short exposures between 10,000 and 14,000 feet MSL may be cumulative and lead to hypoxia. For operations at night, carefully consider the increased risk associated with the loss of night vision capability and the increase in the time required for full dark adaptation. Flights at 14,000 feet MSL without supplemental oxygen may cause a 40-45% loss of night vision capability. Fatigue and excessive smoking may further reduce night vision capability.

***Figure 5.1. Passenger Classification/Restraint Policy.**

Personnel	**Approval Authority**	**Restraint**	**Tac Events**
Additional Aircrew (Note 1)	Aircraft Commander	Alternate Load	Yes
Team Members	Aircraft Commander	Alternate Load	Yes
Passengers			
MEGP			
Maint./Pers. supporting deployment	Unit/CC, COMAFSOF	Seat/Seat Belt	Yes
Unit Assigned/Attached Pers.	Unit/CC	Seat/Seat Belt	Yes
Other Mil.Pers.& DOD Civilians	Group/CC, COMAFSOF	Seat/Seat Belt	Yes
Pers. required for 18 FLTS	18 FLTS/CC	As Required	As Req
Orientation			
Incentive Flights(Military Personnel)	Wing(CONUS), Group(OCONUS)/CC	Seat/Seat Belt	Yes Note 2
DV(Military/Civilian)	Wing(CONUS), Group(OCONUS)/CC	Seat/Seat Belt	Yes Note 2
Familiarization Flights(Mil/Civ/FAA)	Wing(CONUS), Group(OCONUS)/CC	Seat/Seat Belt	Yes Note 2
Spouse	Wing(CONUS), Group(OCONUS)/CC	Seat/Seat Belt	No
Foreign Nationals Foreign Military	AFSOC/CC	Seat/Seat Belt	Yes Note 2
Foreign Nationals(Civilians)	COMSOCEUR/CC or COMSOCPAC/CC	Seat/Seat Belt	Yes Note 2
US Federal Govt Officials	AFSOC/CC	Seat/Seat Belt	Yes Note 2
Public Affairs Flights	As coordinated by Public Affairs	Seat/Seat Belt	Coordinate with PA

Note 1. Military personnel acting as survivors may be considered "additional aircrew."

Note 2. When authorized by approving authority. No simulated emergency procedures or evasive maneuvers.

CHAPTER 6

AIRCREW PROCEDURES

SECTION A--PREMISSION

6.1. Flying Clothing/Safety Equipment:

6.1.1. All crewmembers will wear the AFSOC aircrew uniform outlined in AFI 36-2903.

6.1.2. Flying Clothing. When reporting for flights or alert duties, aircrew personnel will wear designated flying clothing appropriate for the climatic conditions and terrain over which the flight will be made, as determined by the unit commander.

6.1.3. Eye Protection. Use protective goggles, plastic lens glasses, or the helmet visor for eye protection if duties require personnel to be in close proximity to the operating helicopter. Wear goggles whenever dust, sand, dirt, etc., constitute a hazard. Ensure that all personnel involved in the firing of weapons wear eye protection to include one of the following: helmet visors, plastic lens glasses, safety goggles, or aircrew gas mask. Glass lens eyeglasses or sunglasses alone do not satisfy the requirement.

6.1.4. Ear Protection. Aircrews will ensure that hearing protection devices are available on each aircraft prior to flight.

6.2. Tool Kits. The flight engineer will have a tool kit on board for all flights. Individual units will establish requirements for tools to be included in these kits. As a minimum, the kit will include enough tools to remove and install chip detector plugs. Tool kits will have an inventory list for accountability and must be sealed. If the seal is broken by the crew, the aircraft commander, or designatee, will inventory the kit and sign the accountability list prior to departing the aircraft.

6.3. Aircrew Publications Requirements. All crewmembers will maintain and carry on all flights their applicable abbreviated checklist and AFSOCI 11-208, AFSOC CL 24.

SECTION B--PREDEPARTURE

6.4. Flight Crew Information File (FCIF). Review Volume I, part A, before departure on all missions.

6.4.1. Update AFSOC Form 11, FCIF Currency Record, if new material has been added to the FCIF since the last review. Enter the last FCIF item number, date, and initial the AFSOC Form 11. Initialing the AFSOC Form 11 certifies review of all items.

6.4.2. Crewmembers joining a mission enroute will receive an FCIF update from their primary aircrew member counterpart on that mission. Instructor pilots who fly with general officers are responsible for briefing appropriate FCIF items.

6.4.3. Crewmembers not assigned or attached to that unit will certify FCIF review by entering the last FCIF number and their initials behind their name on the file copy of the flight authorization or their ACM orders.

6.5. Mission Kits. Units will maintain one mission kit per aircraft. Prior to departure, the aircraft commander or designated representative will ensure that a current mission kit is aboard the aircraft. See Figure 6-1 for minimum requirements.

9.8.2.1. During day visual meteorological conditions (prior to official sunset). **EXCEPTION:** The following maneuvers are authorized after official sunset: MH-53J- Simulated single engine and AFCS off; MH-60G- SAS/Boost off, simulated single engine, and systems emergencies. The following restrictions apply:

9.8.2.1.1. Instructor pilot is "instructor certified" for night EP's.

9.8.2.1.2. Crew compliment is Day/Night TAC (IAW Fig 3-1.).

9.8.2.1.3. Weather is at or above 1,000 feet ceiling and 2 SM's visibility or circling minimums, whichever is higher.

9.8.2.1.4. Adhere to the restrictions listed in paragraphs 9.8.2.2., 9.8.2.3., and 9.8.2.4. below.

9.8.2.2. During training, currency, or evaluation flights.

9.8.2.3. When passengers are not aboard.

9.8.2.4. When an instructor or flight examiner pilot is designated on flight orders under "Crew Position" as IP or EP and occupies a pilot seat with a set of controls. Instructor pilot candidates may perform or supervise simulated emergencies during initial evaluations under the supervision of a flight examiner pilot not in a pilot seat if the other pilot at the controls is qualified as an aircraft commander, or higher, in the maneuver.

9.8.2.5. Practice Autorotations. The following policy is established for practice autorotations:

9.8.2.5.1. Due to the risk associated with this maneuver, carefully consider wind, density altitude, aircraft gross weight, and individual pilot proficiency prior to training. Fly each approach as if a landing may be required. If a malfunction occurs, the aircraft is then in position to execute a safe landing.

9.8.2.5.2. The initial autorotation for training or currency must be a straight-ahead autorotation accomplished by the instructor to evaluate aircraft performance (during evaluations, the pilot being evaluated may perform this autorotation). The first autorotation will be accomplished from 1000 feet AGL (MH-53) or 500 feet AGL (MH-60).

9.8.2.5.3. Instructor pilots will terminate the maneuver and initiate a power recovery at the first indication of abnormally high or low rotor RPM, excessive sink rate, low airspeed, ineffective flare, or at any time an inadvertent touchdown might occur.

9.8.2.5.4. Accomplish autorotations to a runway or taxiway if possible. When such an area is not available, select a smooth, level area. The instructor or flight examiner will ensure it is free of obstructions prior to commencing training.

9.8.2.5.5. Power recovery autorotations require the aircraft to be aligned within 45 degrees of the wind direction when winds are 15 knots or greater; below 15 knots aircraft heading must be within 90 degrees of the wind. A functional wind indicating device must be available to provide accurate wind information.

* 9.8.2.5.5.1. H-1 power recovery autorotations require the aircraft to be aligned within 45 degrees of the wind direction when winds are 10 knots or greater; below 10 knots, aircraft heading must be within 90 degrees of the wind.

9.8.2.5.6. Autorotation Procedures.

9.8.2.5.6.1. H-60 minimum entry altitude for 180-degree autorotations is 800 feet AGL; 500 feet AGL for 90 degree autorotations and 200 feet AGL for 45 degrees or less autorotations. The throttles must not be retarded.

Initiate the flare between 125 and 75 feet AGL with a minimum of 80 KIAS. Complete the power recovery no lower than 15 feet.

9.8.2.5.6.2. H-53 minimum entry altitude for autorotations is 500 feet AGL with no more than a 45 degree offset from the intended landing direction. Autorotations requiring more than 45 degrees of turn will be accomplished from a minimum of 1,000 feet AGL. The throttles will not be retarded.

*9.8.2.5.6.3. H-1 minimum entry altitude for 180-degree turning autorotations is 800 feet AGL; 500 feet AGL for autorotations less than 180-degrees. For 180-degree autorotations, the aircraft must be wings level, have a minimum of 60 KIAS, rotor RPM within limits, normal rate of descent, and be aligned with landing/recovery heading at no lower than 150 feet AGL. If any of these conditions are not met, initiate a power recovery immediately. The wings level requirement does not prohibit minor heading corrections on final. When practicing autorotations in excess of 180 degrees initiate a power recovery at or above 500 feet AGL. All practice autorotations will terminate with a power recovery no lower than 4 feet AGL with a maximum ground speed of 15 knots. The throttles will be retarded until power recovery is initiated.

9.8.2.6. Simulated Single-Engine Emergencies.

9.8.2.6.1. Single-engine approaches and landings where a throttle is retarded, must be practiced to a hard surface landing area.

9.8.2.6.2. Initiation of practice single-engine emergencies must not be lower than 300 feet AGL, 80 KIAS.

NOTE: Practice single-engine emergencies may be initiated below the above listed altitude as long as torque available is limited on both engines versus reducing torque available on the simulated failed engine. Instructors must use caution when simulating single-engine emergencies at low altitudes and airspeeds.

*9.8.2.6.2.1. H-1 Only. If single engine hover power is available, the maneuver may be initiated in a hover. Do not reduce torque on the simulated failed engine unless indicated torque is below computed single-engine torque available. Accomplish a power available check prior to beginning the approach. Terminate training if the engine produces less than computed power minus 2%. For subsequent approaches using the same engine, the power available check may be simulated.

9.8.2.6.3. Practice the following simulated single-engine maneuvers by limiting the torque available on both engines versus reducing torque for the simulated failed engine:

9.8.2.6.3.1. Air refueling.

9.8.2.6.3.2. Approaches to a spot.

9.8.2.7. AFCS/Boost--OFF. Conduct under the following limitations:

9.8.2.7.1. Initiate maneuvers on the ground or in straight and level flight at a minimum altitude of 300 feet AGL and 80 KIAS.

9.8.2.7.2. Make approaches to a hover or landing to a hard surface landing area or slide area.

9.8.2.7.3. If any control difficulties are encountered while the system is off, the instructor or flight examiner will take control of the aircraft and restore the system as appropriate.

*9.8.2.8. Manual Fuel Operations (H-1). Conduct under the following limitations:

*9.8.2.8.1. Entry will be at a minimum of 500 ft AGL and 70 KIAS, in a hover when single-engine hover capability is available, or while on the ground. Ensure collective setting is below computed single-engine torque available prior to retarding the throttle to flight idle. Complete flight manual procedures, maintaining torque approximately five to ten percent below the governed engine. To return to automatic fuel control, use the checklist and return the fuel control switch to its original position.

*9.8.2.9. Slide Landing Training Areas (H-1). Local slide landing training areas are used for emergency and normal procedure maneuvers. If wind information at the slide area cannot be obtained through tower services, an operational wind detection device must be readily discernible to the pilots flying and close enough to provide accurate information.

*9.8.2.9.1. Operations group will determine requirements/dimensions for helicopter slide landing areas.

*9.8.2.9.2. The pilot in command will accomplish the following: 1) Brief the hazards of the slide landing area prior to commencing any maneuvers, 2) visually inspect the slide area for hazards and surface condition, and 3) if the slide area is not safe, go to a hard surface area if available.

9.9. General Procedures.

9.9.1. Make takeoffs and landings using a constant heading or ground track into the wind or alignment with the runway. Accomplish crosswind correction by using the wing-low method on takeoff until a climb is established and during the final portion of approach. At other times, the crab method may be used.

9.9.2. Fly maneuvers with emphasis on precise altitude, airspeed, and aircraft control.

9.9.3. Instrument flying must be IAW AFMAN 11-217, the flight manual and this instruction.

9.9.4. Accomplish actual and practice emergency procedures IAW applicable flight manuals unless specified otherwise in this chapter.

9.9.5. Entry altitudes for approaches are 300 feet AGL unless otherwise specified in this chapter.

9.9.6. Perform hovering maneuvers at a maximum of 5 knots on a constant heading and ground speed for training.

9.9.7. Procedures in this chapter are in addition to those found in the applicable flight manual.

*** 9.10. H-1 Procedures.**

* 9.10.1. Use 100 percent Nr for all maneuvers.

* 9.10.2. Use a 3 - 5 foot skid height for hovering maneuvers unless circumstances require higher.

* 9.10.3. Takeoff to a Hover.

* 9.10.3.1. Vertical ascent to 3-5 foot skid height.

* 9.10.3.2. Constant heading.

* 9.10.4. Hovering and hovering turns.

* 9.10.4.1. Constant altitude over a spot.

* 9.10.4.2. Constant rate of turn.

* 9.10.4.3. Perform sideward/backward flight using a constant heading and groundspeed.

* 9.10.4.4. Maximum wind velocity for training is 15 knots.

* 9.10.5. Landing from a hover.

* 9.10.5.1. Vertical descent.

* 9.10.5.2. Constant heading.

* 9.10.6. Normal takeoff.

* 9.10.6.1. Use hover power plus 10 percent.

* 9.10.6.2. From the ground or a hover smoothly increase power to desired setting while accelerating forward at hover altitude.

* 9.10.6.3. Upon passing effective translational lift (ETL, approximately 15-20 knots), adjust attitude to climb.

* 9.10.6.4. At 70 KIAS the maneuver is terminated; adjust power and attitude for a normal climb.

* 9.10.7. Marginal power takeoff.

* 9.10.7.1. Takeoff from a 3-5 foot hover using only that power required for the hover.

* 9.10.7.2. Parallel the ground until passing through ETL, then initiate a climb. At 50 feet (simulated obstacle), lower the nose slightly and accelerate to 50 KIAS. At 50 KIAS, the maneuver is terminated; adjust power and attitude for a normal climb.

* 9.10.8. Maximum performance takeoff.

* 9.10.8.1. From the ground or a hover, smoothly increase power to hover power plus 10-15 percent.

* 9.10.8.2. After climbing through normal hover altitude, establish a slightly nose low attitude and climb to clear a simulated 100 foot obstacle.

* 9.10.8.3. Maintain attitude until passing 100 feet AGL, then smoothly lower the nose without descending and accelerate to 70 KIAS. At 70 KIAS, the maneuver is terminated.

* 9.10.9. VFR traffic pattern.

* 9.10.9.1. Fly the downwind leg at 500 feet AGL and 90 KIAS. Adjust pattern altitudes to comply with local traffic control rules.

* 9.10.9.2. On base, descend to 300 feet AGL and slow to 70 KIAS.

* 9.10.9.3. Other pattern types may be flown as the situation warrants; however, exercise caution to avoid excessive bank angles, descent rates, or low airspeeds. The point of rollout on final should allow a controlled, straight approach without the need for aggravated flares, abrupt control movements, or large collective inputs.

* 9.10.10. Normal approach.

* 9.10.10.1. Comply with flight manual. Use 300 feet AGL as entry altitude unless specified otherwise in this instruction.

* 9.10.11. Steep approach.

* 9.10.11.1. Comply with flight manual. Use 300 feet AGL as entry altitude unless specified otherwise in this instruction.

* 9.10.12. Turning approaches.

* 9.10.12.1. For training purposes, initiate a turning approach from base altitude and airspeed.

* 9.10.12.2. Avoid steep approach angles, high bank angles, and high descent rates (greater than 800 FPM below 50 KIAS).

* 9.10.12.3. Decrease ground speed and rate of descent to establish a hover (or touchdown) over the intended landing spot.

* 9.10.13. Shallow approach/slide landing.

* 9.10.13.1. Comply with flight manual. Use 300 feet AGL as entry altitude unless specified otherwise in this instruction.

* 9.10.14. Approach to a touchdown.

* 9.10.14.1. Initiate and fly the desired approach angle. Continue the descent and approach angle while slowing the groundspeed and vertical velocity.

* 9.10.14.2. Establish a landing attitude. Touchdown at or near zero groundspeed. Cushion the touchdown with collective and continue to fly the aircraft fully onto the ground.

* 9.10.15. Unusual Attitude Training.

* 9.10.15.1. Enter at or above 1000 feet AGL.

* 9.10.15..2. Simulated unusual attitudes will not exceed 30 degrees of bank, 20 degrees nose high attitude, or 10-degree nose low attitude.

9.11. H-53 Procedures.

9.11.1. Use 100 percent Nr for all maneuvers unless maximum Nr is required. Maximum Nr may be simulated when conditions permit.

9.11.2. Normally, entry altitude for all approaches except autorotations is 500 feet AGL.

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Figure 11.4. H-53 Main Rotor Clearance.

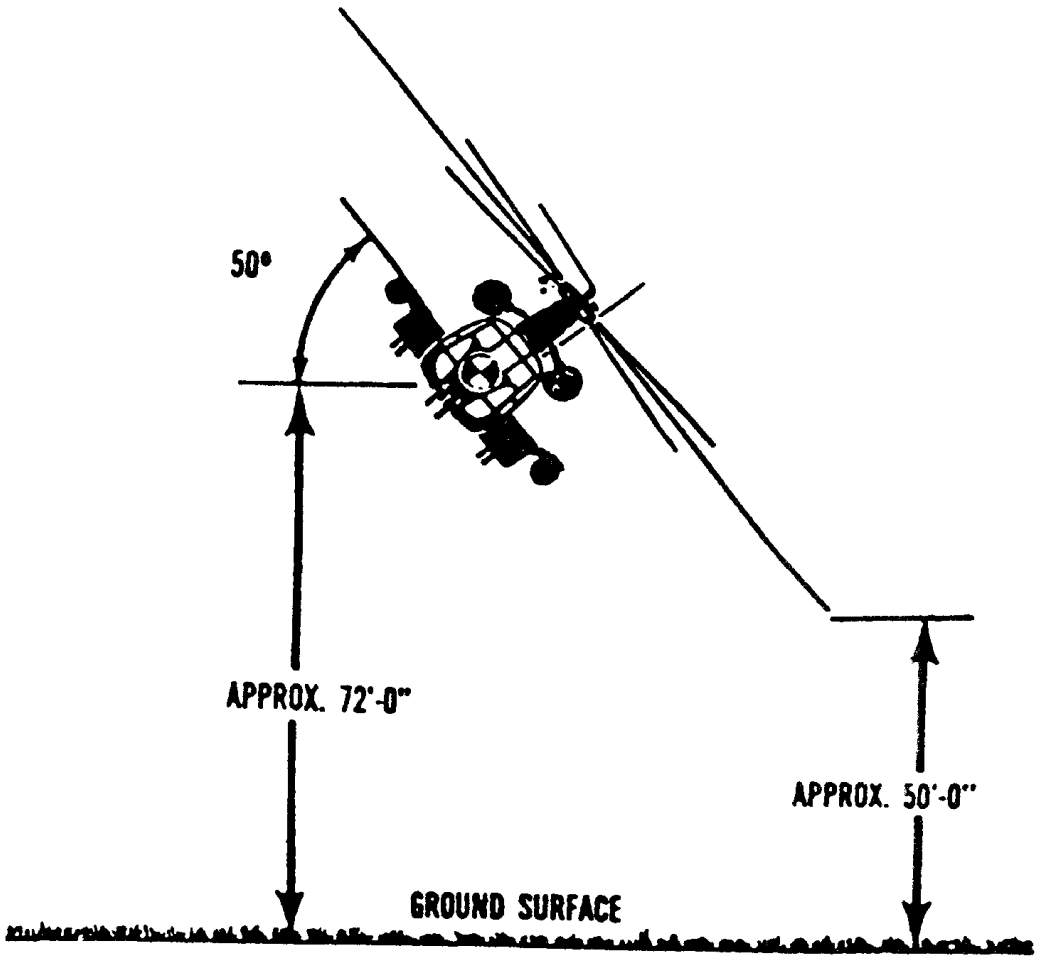

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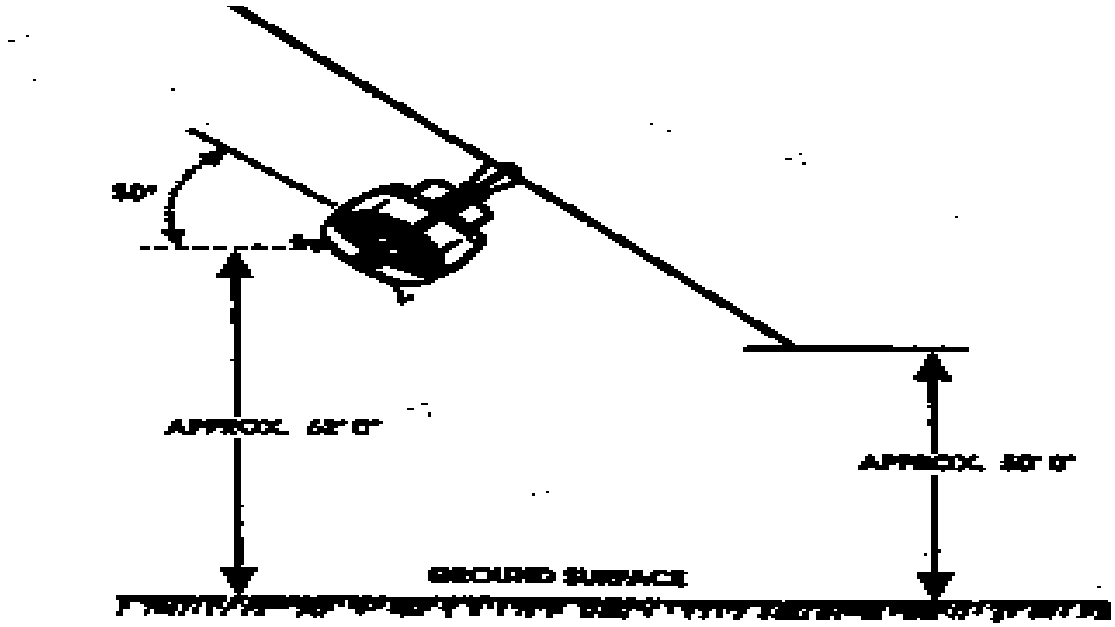
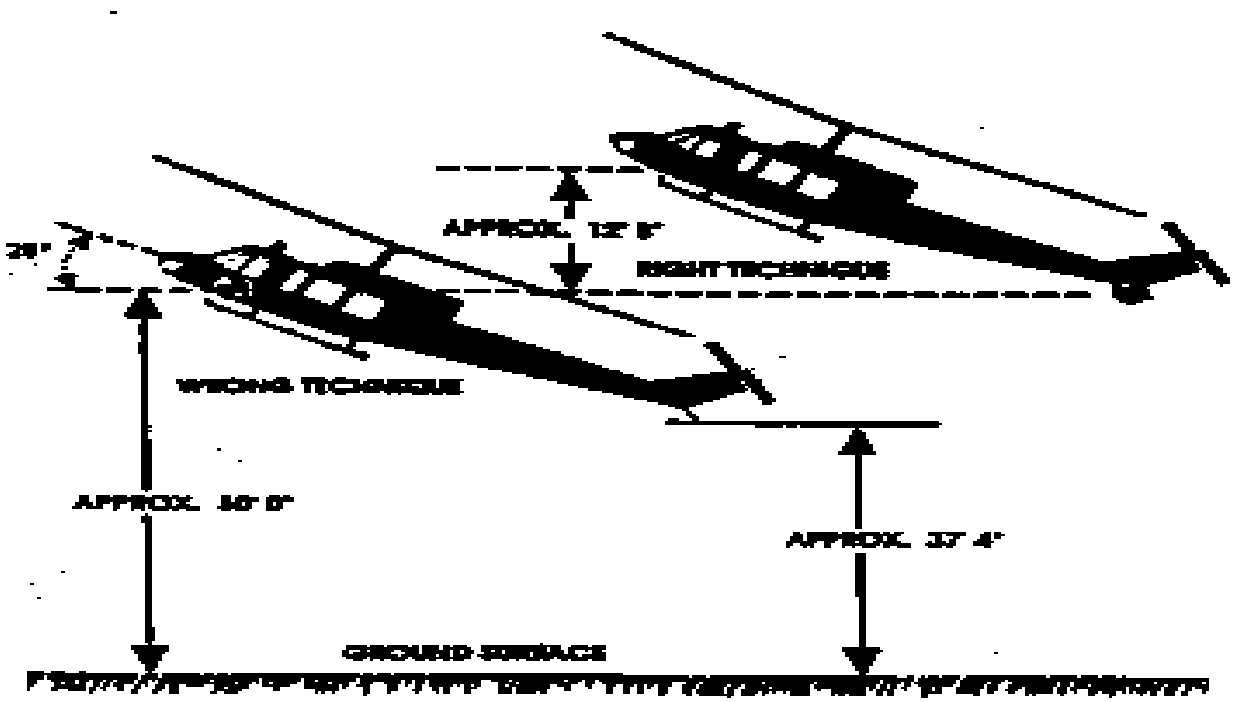
***Figure 11.5. H-1 Main Rotor Clearance.**



*** Figure 11.6. UH-1N Tail Rotor Clearance.**



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CHAPTER 12

HELICOPTER STANDARD CONFIGURATION

12.1. General. Detail standard configuration in appropriate wing or unit instructions. This chapter contains the policy governing configuration.

12.2. Responsibilities. This instruction provides guidance on helicopter equipment configuration. Due to varied worldwide conditions, environments, and locations of possible combat contingencies, all wings will establish and publish equipment requirements based on their known taskings. Additional special mission equipment may be added at the option of the unit commander. For actual or simulated combat operations, units will validate their planned combat configurations. For unit combat training, individual unit wartime configurations should be flown as often as possible to aid in configuration validation. Categorize and manage all equipment authorized for and installed on the aircraft in accordance with AFI 21-103. Carry a hoist cable quick splice device on all hoist equipped aircraft. Do not modify aircraft to secure or install equipment unless authorized by aircraft technical orders or DODI 5000-2AF Sup 1.

NOTE: Securing life support equipment and medical kits with seat belts is authorized. Items requiring constant access, such as nav kits and mission kits, that weigh less than 200 lbs may be secured with seat belts or snap links. Secure cargo and equipment not requiring rapid removal during an aircraft/medical emergency with devices identified in TO 1C-1-71. Do not modify tiedown devices in any fashion.

12.3. Deviations. Commanders may authorize deviations from standard configuration. Deviations from combat configuration requirements are authorized at employment locations (including exercises) when the mission dictates.

12.4. FCF Configuration. Aircraft may fly functional check flights without the equipment installed; however, emergency survival equipment required by AFSOCI 11-301, as supplemented, will be on board.

12.5. Discrepancies. Document all standard configuration discrepancies using AFTO Form 781A.

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CHAPTER 13

FORMATION FLYING

13.1. General. The primary purposes of helicopter formation flight are mutual support and protection. If more than three aircraft are required for a tactical situation, strong consideration should be given to breaking into smaller elements to aid threat avoidance, and increase maneuverability and flexibility. The minimum separation between the closest portions of any two helicopters in a formation is one rotor diameter. Base rotor disk separation on the largest rotor disk diameter. Vertical step-up or down is optional for each succeeding helicopter.

13.2. Responsibilities. Every crewmember has specific responsibilities which directly affect the safety and mission of the entire formation.

13.2.1. Flight Lead. Flight leads are responsible for the mission conduct of their formations. They must know and consider the capabilities of all members of the flight. Flight lead is responsible for the following:

*13.2.1.1. Briefing the flight, covering as a minimum, sections 6 through 9 of the aircrew briefing (AFSOC CL 24) and any other pertinent information as determined by flight lead.

13.2.1.2. Maintaining formation integrity and air discipline.

13.2.1.3. Directing radio channel changes, making radio calls, navigating, ensuring formation clearance from other aircraft and hazards, and directing all formation changes.

13.2.1.4. Conducting a postmission formation debriefing.

13.2.2. Wingman. The wingman is responsible for the following:

13.2.2.1. Maintaining position in the formation.

NOTE: Advise flight lead when it is necessary to deviate from any directed position.

13.2.2.2. Navigation and terrain and obstacle clearance independent of lead (to the maximum extent possible during night operations on PAVE LOW's wing).

13.2.2.3. Backing up flight lead where necessary and being able to assume the lead if required.

13.2.2.4. Notifying lead if visual contact with formation aircraft is lost, flying safety is jeopardized, or radio failure occurs.

13.2.2.5. Questioning flight lead via the radio anytime a significant deviation occurs that may jeopardize mission accomplishment.

13.2.3. Crewmembers. Each crewmember has the responsibility to provide mutual coverage for other aircraft in the formation. This includes scanning the six o'clock position of other helicopters in the formation since rearward visibility is extremely limited. Mutual coverage is especially important in a combat environment where the flight is susceptible to an attack from enemy ground and airborne weapon systems. Scanners are also responsible for notifying the pilot of all changes in the relative position of other aircraft in the formation.

13.3. Dissimilar Formation. Formation flights with dissimilar aircraft are authorized when all participating crewmembers are briefed and are thoroughly familiar with the other aircraft's performance and tactics. Base rotor disk separation on the largest disk diameter.

13.4. Communication. Do not initiate formation flight without positive interaircraft radio communications (may not be required for contingency operations). Prior to formation flight, conduct a communications check of all aircraft in the formation.

13.4.1. The following procedures will be used during communications checks:

13.4.1.1. Plain. Perform plain comm checks on each radio in sequence; FM, UHF, VHF, MX, SAT, PLS, and HF (i.e., Hawk 51 Flight, check FM, plain). Each aircraft will respond in order with his call sign. Lead will check all alibis prior to changing radios/frequency band.

13.4.1.2. Secure. After completing the plain mode comm check, perform a secure mode check using the same format as plain and keep track of the results on the frag/comm check form.

13.4.1.3. When the comm check is complete, the lead aircraft will broadcast his call sign and announce the comm check complete.

13.4.2. Radio Procedures. After initial radio contact has been established between aircraft, lead is responsible for all calls pertaining to the flight.

13.4.2.1. Only lead may initiate frequency changes (use chattermarks to the maximum extent possible). Lead is responsible for maintaining communications discipline. Wingmen need not acknowledge lead's transmissions unless he specifically states, "acknowledge". Acknowledgments by wingmen will be made utilizing their full callsign. Enroute frequency changes will normally be DIRECTED and/or AUTOMATIC.

13.4.2.2. DIRECTED. Lead directs a frequency change over interflight radio. Wingmen will not acknowledge if "PUSHED" to another frequency (i.e. "Darken 21 push A-4"). Wingmen will acknowledge if "ROLLED" to another frequency (i.e. "Darken 21 flight roll B-2"). Acknowledge on interplane radio ("Darken 22, Darken 23").

13.4.2.3. AUTOMATIC. Frequency changes are made at a prebriefed time, waypoint, easily identified terrain feature or control measure such as a border or phaseline without prompting from lead.

13.4.2.4. Lead will check in the flight on the new frequency anytime primary interplane is changed. If a wingman fails to check in after a reasonable length of time, lead will attempt contact on another radio. If this fails, lead will direct members of the flight back to the previous (or a prebriefed) frequency to reestablish contact. As a last resort, lead will initiate a prebriefed chattermark code on guard in order to establish contact on prebriefed frequencies.

13.4.2.5. Both the pilot and copilot in each aircraft in the flight will monitor all interplane frequencies.

13.4.2.6. Make only essential transmissions. Strict radio procedures and discipline must be enforced in order to avoid jeopardizing safety and mission effectiveness.

13.4.3. Signals. Use formation signals contained in AFSOC CL 24 and AFI 11-205. Additional signals may be used if prebriefed.

13.4.3.1. Aircraft commanders will ensure their aircrews have the appropriate equipment to pass light signals prior to engaging in night formation flights.

13.4.3.2. Use the following sequence when passing light signals between helicopters:

13.4.3.2.1. Sender gives an "attention" signal (circular motion).

13.4.3.2.2. Receiver acknowledges by giving "attention" signal in reply.

13.4.3.2.3. Sender passes signal.

***13.20. Station Keeping.** If a mission is to be conducted under known IMC conditions, each aircraft commander is responsible for maintaining safe separation between other aircraft in the formation. These procedures may be useful in VMC, Marginal VMC or IMC. If a simultaneous landing is required, VMC must exist prior to the target area to allow the formation to rejoin. IMC rejoins will not be conducted. If the target area is IMC, the mission must allow each aircraft to perform coupled approaches to the target area. The following are some techniques to maintain safe spacing while performing multiship TF/TA operations. These techniques can be utilized to maintain separation between wingmen or elements. Depending on the conditions and METT-T considerations, station keeping procedures should be limited to no more than five aircraft/elements. If more than three elements are required, consider alternate routes to a VMC rendezvous point prior to the objective area.

13.20.1. **TACAN air-to-air.** Separation between two or more aircraft/elements may be accomplished using TACAN air-to-air. Formations of more than two aircraft may use prebriefed separation distances from the lead aircraft. Constantly monitor air-to-air DME throughout the flight. This is not a stand alone method and should be combined with other station keeping techniques.

13.20.2. **Timing.** Use individual aircraft/element timing to cross waypoints at staggered times to maintain aircraft/element separation. Thoroughly brief the amount of time between aircraft. Maintain constant pre-briefed groundspeeds between waypoints to maintain adequate separation.

13.20.3. **Radar.** Under certain terrain and flight conditions, the Radar and various modes may be used to monitor the preceeding aircraft. The tactical situation and other station keeping techniques used will determine which mode (TA or GMP) is utilized. The aircraft commander/flight lead will determine the technique utilized. Each successive aircraft should consider stepping up or staggering the set altitude on the radar depending on the threat. For overwater or flat terrain flights, GMP may be effective for maintaining separation from multiple TF/TA Radar equipped aircraft. Flight lead will prebrief separation and rejoin points, if applicable.

13.20.4. **Alternate Routes.** The ideal separation technique is for each aircraft to fly a different route to a VMC rendezvous location or to the target in IMC using staggered approach times. Each member of the formation must be familiar with the routes of the other aircraft. Thoroughly brief the rendezvous point and rejoin procedures. METT-T may restrict this technique.

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18.9.3.2.1. The SPIE is also suitable for the extraction of swimmers from the water. For this procedure, tie three LPU bladders or any type of flotation device to the SPIE rope to provide buoyancy for the rope while in the water.

18.9.3.2.2. Tie one flotation device at each end of the D-ring attachment point areas and one flotation device in the middle of the attachment point area, just above the middle two sets of D-rings.

18.9.3.2.3. After the pilot has established a stable hover over the swimmer's location, the FE or AG will deploy the rope with flotation devices attached. When the team members have completed their hookup, the team leader will signal the FE or AG with a "thumbs up" to commence the lift off.

18.9.3.2.4. The pilot will initiate a vertical climb until all team members are clear of the water. After takeoff, flight speeds, altitudes, and insertion procedures are the same as for over land. EXCEPTION: If the insertion is to a ship, the team members must take their landing orders from the personnel in charge of the landing platform.

NOTE: Swimmers should allow the rope to contact the water to discharge any static electricity prior to attempting to hook up to the SPIE rope D-rings.

18.9.3.3. Safety Procedures.

18.9.3.3.1. Should a team member develop an emergency during an extraction, the team member will place both hands on top of his head to inform the crew. The pilot will lower the team member to the ground or water as safely as possible.

18.9.3.3.2. Airspeeds shall not exceed 70 knots or 50 knots during cold weather operations. At least one operable radar altimeter is required to maintain obstacle clearance between ropers and the ground.

18.9.3.3.3. The lower strobe light must be off while conducting SPIE operations. Should the helicopter develop an emergency, turn on the lower strobe to alert the team members. Then, lower the ropers to the ground. Once on the ground, the team will unhook and depart to the three o'clock position. The helicopter, if possible, should move to the nine o'clock position away from the team.

18.9.3.3.4. The V-blade knife or similar tool must be readily available in the event the SPIE rope straps need to be cut due to an emergency or the rope becomes entangled.

18.9.3.3.5. The helicopter must have an operable radar altimeter. Maximum flight time with personnel on the rope is 15 minutes.

18.9.3.3.6. The MH-60G FRIES bar has three pinned positions: stowed, intermediate (used for insertion or extraction), and fully extended (for insertion only).

18.10. Helo Cast and Combat Rubber Raiding Craft(CRRC) Delivery Operations (Soft Duck):

18.10.1. Use the following procedures for delivering boats and rafts from the H-53:

* 18.10.1.1. Aircrew and team briefings will emphasize and must consist of proper hand signals, time calls and emergency procedures.

18.10.1.2. CRRC center of gravity limitations will be discussed during both briefings. Failure to ensure adequate distribution of the team's equipment may result in an aft CG causing the craft to become near vertical during deployment.

18.10.1.4. CRRC and personnel equipment must be securely attached and positioned inside the craft before loading onto the aircraft.

18.10.2. Ensure all contents of the CRRC are securely attached and positioned inside the CRRC, otherwise, the CRRC may snag on the aircraft during deployment.

18.10.3. Boat/Raft Configuration.

18.10.3.1. Remove keel guard if desired. The boat may be laced to plywood or suitable material which will roll easily on the H-53 roller system.

18.10.3.2. The boat may be loaded bow or stern first; two boats may be loaded if loaded bow first in the H-53. Secure the boats with at least two cargo tiedown straps per boat, with a short bow or stern line attached to the aircraft.

18.10.3.3. The aircrew should attempt to limit the amount of equipment deployed in the boat or raft.

18.10.4. Brief and use the following procedures:

18.10.4.1. At the "5-minute" call, team members who will deploy from the front (if this method is used) will move to the front of the cabin area. The team members who will deliver the boat will prepare for exit in the aft.

NOTE: H-53 must have the tail skid retracted prior to drop.

18.10.4.2. At the "1-minute" call, the team members and crewmembers will prepare the boat for drop by removing tiedown straps except bow or stern line.

18.10.4.3. The pilot will approach a 10-foot wheel height above the waves while slowing to 10 knots ground speed. The hover coupler may be used. The pilot not flying or FE will call out radar altimeter readings to the pilot.

18.10.4.4. When cleared to drop, the pilot will say "BOATS, BOATS, BOATS". When cleared, the designated crewmember or team member will release the bow or stern line from the aircraft and push the boat out.

NOTE: The team may exit the aircraft from either the door or ramp or both. If both are used, execute the ramp delivery first. These measures will reduce adverse pitch oscillations during deployment.

18.10.4.5. The delivery team leader will remain on intercom until the 1-minute call. Designate a prebriefed crewmember on intercom to relay the clear to drop signal to the team. Concise briefings and good crew coordination are a must in conducting safe helo cast operations.

18.10.5. The following procedures are for delivering soft ducks from H-60s:

18.10.5.1. General. These procedures are guidelines for the deployment of a Zodiac boat and up to six personnel from the cabin during either day or night. A deflated Zodiac, with the motor attached, is deployed while established in a hover over the water. The boat's descent to the water is controlled by a caving rope and rappelling hitch. Personnel are deployed by either fast rope or low and slow depending on hover height and user preference. Additional required equipment is lowered to personnel following the release of the boat.

***NOTE:** Certain teams may choose to have one or two team members ride the Zodiac as it is being lowered into the water. This is to expedite the inflation of the Zodiac once it reaches the water. This technique results in increased risk for the team members and will be performed at the discretion of the Squadron Commander/DO (Mission Commander while deployed) and the team involved. This maneuver will be thoroughly briefed prior to performing the insertion. The hover height will be discussed during the team brief but, at no time will the hover height exceed 20 feet. This is to ensure minimal injury to team members if they should fall from the Zodiac.

18.10.5.2. Equipment Installation and Configuration.

18.10.5.2.1. The Zodiac is prepared by the user. A harness holds the boat in its rolled configuration. This harness is equipped with a single point quick release which also serves as the attaching point for lowering the boat.

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